

MARKED-UP COPY OF CLAIMS, AS AMENDED

21. A method of detecting a molecule or molecule complex in a [diluent, solvent or gel] **sample**, comprising:

(a) contacting the molecule or **[molecule] molecular** complex with an ultra-microelectrode array, said ultra-microelectrode array comprising at least two electrode structures, **wherein each of said electrode structures is insulated from each other,** wherein the spacing between the electrode structures is less than 3 μm ;

(b) producing an alternating electric field between the electrode structures;
and

(c) measuring changes in current or potential between the electrode structures, whereby the changes in current or potential are caused by the molecule or the **[molecule] molecular** complex, **wherein said molecule or molecular complex comprises a nucleic acid or antibody, and wherein the molecule or molecular complex is positioned in the gap between the electrode structure.**

25. A method according to claim 21, wherein the changes in current or potential are caused by diffusion or binding of the molecule or **[molecule] molecular** complex to the ultra-microelectrode array.

31. A method according to claim 21, wherein the molecule or **[molecule] molecular** complex binds to a surface of the electrode structures.

32. A method according to claim 31, wherein the molecule or **[molecule] molecular** complex binds to the surface of the electrode structures via physical or chemical binding.

33. A method according to claim 31, wherein the molecule or **[molecule]** **molecular** complex binds to the surface of the electrode structures via self-assembling.
34. A method according to claim 31, wherein the molecule or **[molecule]** **molecular** complex binds to the surface of the electrode structures via electropolymerization.
37. A method according to claim 21, wherein **[the ultra-microelectrode array comprises a molecular layer, the molecular layer comprising] the electrode structures are layered with a substrate which is bound to an antigen or a nucleic acid molecule, said antigen or said nucleic acid molecule capable of binding to the molecule or molecular complex to be detected [a second molecule that binds to the molecule or molecule complex to be detected, and whereby the binding between the second molecule and the molecule complex to be detected is capable of causing the changes in current or potential between the electrode structures].**
40. A method according to claim 37, wherein the second molecule comprises an antigen, and wherein the molecule or **[molecule]** **molecular** complex to be detected comprises an antibody.
61. A method of detecting a molecule or molecule complex in a **[diluent, solvent or gel] sample**, comprising:
- (a) contacting the molecule or molecule complex with an ultra-microelectrode array, said ultra-microelectrode array comprising at least two electrode structures, **wherein each of said electrode structures is insulated from each other,** wherein the spacing between the electrode structures is less than 1 μm ;
 - (b) producing an alternating electric field between the electrode structures;
- and

(c) measuring changes in current or potential between the electrode structures, whereby the changes in current or potential are caused by the molecule or the [molecule] molecular complex, wherein said molecule or molecular complex comprises a nucleic acid or antibody, and wherein the molecule or molecular complex is positioned in the gap between the electrode structure.